

# Investigating the Criminal Life-course of Place:

Space-Time Analysis of Robberies using  
Multi-methods GIS

**PETER K. B. ST. JEAN, Ph.D.**

Assistant Professor  
Department of Sociology  
University at Buffalo  
State University of New York (SUNY)  
430 Park Hall, Buffalo, NY 14260  
Phone: 716-645-2417\*468, Fax: 716-645-3934  
pstjean@buffalo.edu

**CHRISTOPHER A. BADUREK**

Doctoral Candidate  
NSF IGERT Fellow in GI Science  
Department of Geography  
University at Buffalo  
State University of New York (SUNY)  
105 Wilkeson Quad, Buffalo, NY 14261  
badurek@buffalo.edu

University at Buffalo The State University of New York

## Overview

- Analysis of robberies at small units requires multi-method techniques
- Crime within one police beat on Chicago's South Side, 1999-2000
- Analysis of Robbery Data
  - Classification of street blocks into life-course ideal types
  - Ethnographic data and Systematic Social Observation (SSO) Data explain logic of spatio-temporal distribution

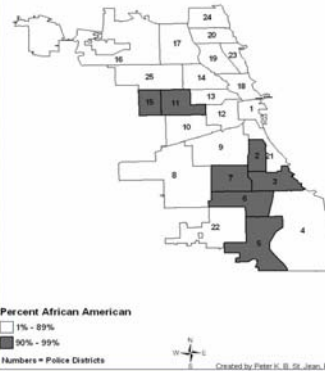
University at Buffalo The State University of New York

## Life-course Typology

Criminogenic Life-course Type	Crime Rate	
	1999	2000
Stable Hotspot	High	High
Stable Warm Spot	Midrange	Midrange
Stable Cold Spot	Low	Low
Freezing Hotspot	High	Low
Warming Hotspot	High	Midrange
Heating Warm Spot	Midrange	High
Freezing Warm Spot	Midrange	Low
Warming Cold Spot	Low	Midrange
Heating Cold Spot	Low	High

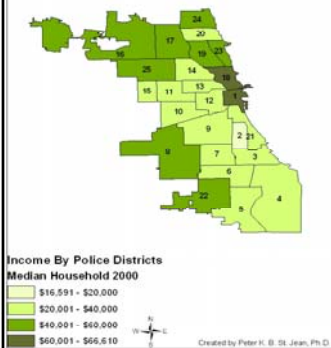
University at Buffalo The State University of New York

Chicago Police Districts over 90% African American



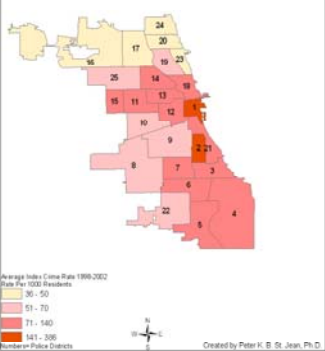
University at Buffalo The State University of New York

Income Distribution by Police Districts



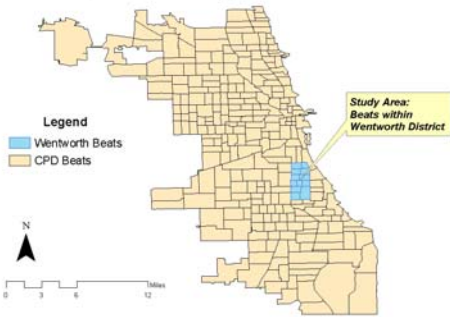
University at Buffalo The State University of New York

Average Index Crime Rate 1998-2002  
(Per 1000 Residents)

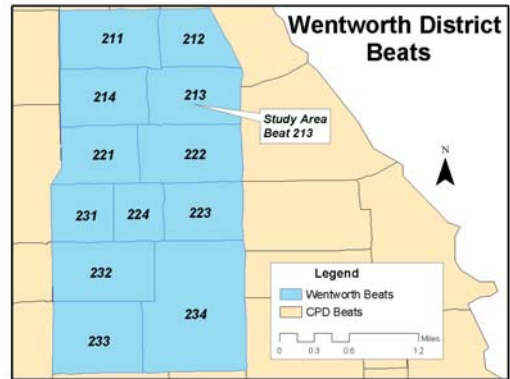


University at Buffalo The State University of New York

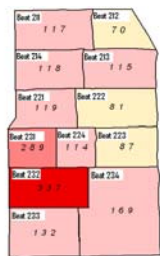
## Chicago Police Department Beats



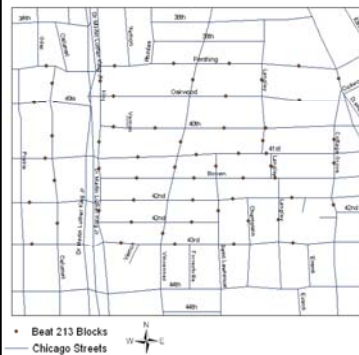
## Wentworth District Beats



## Index Crime Rates (1999-2002) for the Twelve Police Beats in Wentworth



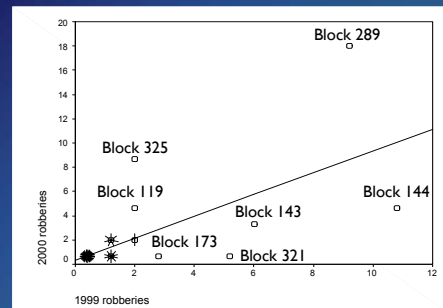
## Map of Chicago Beat 213: Grand Boulevard



## Poisson Test for Robberies

Frequency of Robberies	Number of Blocks			
	1999 Observed	1999 Expected	2000 Observed	2000 Expected
0	32	0	27	0
1	17	21	17	21
2	4	11	9	13
3	1	4	1	6
4	0	1	1	2
5	1	0	1	0
6	1	0	0	0
7	0	0	0	0
8	0	0	0	0
9	1	0	1	0
10	0	0	0	0
11	0	0	0	0
12	0	0	0	0
13	0	0	0	0
14	1	0	0	0
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
18	0	0	1	0
Total	58	58	58	58

## Scatter Plot for Robberies



## Bivariate Correlations

Variables	Coefficients	P-value	N
1999 and 2000 Robberies	.69**	.00	58
1999 Robberies and Physical Disorder	.09	.49	58
1999 Robberies and Social Disorder	.36**	.01	58
1999 Robberies and Collective Efficacy	-.33*	.02	47
2000 Robberies and Physical Disorder	.09	.49	58
2000 Robberies and Social Disorder	.36**	.01	58
2000 Robberies and Collective Efficacy	-.55**	.00	58
Physical Disorder and Social Disorder	.34**	.01	58
Physical Disorder and Collective Efficacy	-.11	.48	47
Social Disorder and Collective Efficacy	-.53**	.00	47

## Crosstabulation for Robberies

		1999 Robberies				
		Cold Spots	Warm Spots	Hotspots	Total	
2000 Robberies	Cold Spots	Count	21	6	0	27
		Expected Count	14.9	7.9	4.2	27
		% within 1999	65.6%	35.3%	0.0%	46.6%
		Adjusted Residual	3.2	-1.1	-3.0	
	Warm Spots	Count	11	11	4	26
		Expected Count	14.3	7.6	4.0	26.0
		% within 1999	34.4%	64.7%	44.4%	44.8%
		Adjusted Residual	-1.8	2.0	0.0	
	Hotspots	Count	0	5	5	5
		Expected Count	2.8	1.5	0.8	5.0
		% within 1999	0.0%	0.0%	55.6%	8.6%
		Adjusted Residual	-2.6	-1.5	5.5	
Totals	Count	32	17	9	58	
	Expected Count	32.0	17.0	9.0	58.0	
	% within 1999	100%	100%	100%	100%	
	Rankings					

## Chi-Square Tests

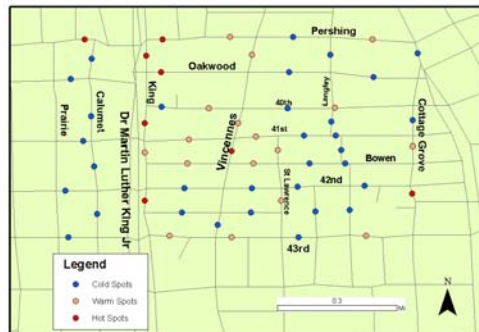
### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	36.654 <sup>a</sup>	4	.000
Likelihood Ratio	31.898	4	.000
Linear-by-Linear Association	22.559	1	.000
N of Valid Cases	58		

a. 5 cells (55.6%) have expected count less than 5. The minimum expected count is .78.

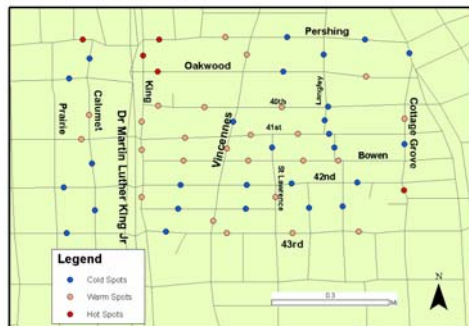
## Classification of Blocks 1999 Robberies

Class of Robberies per Street Block Faces



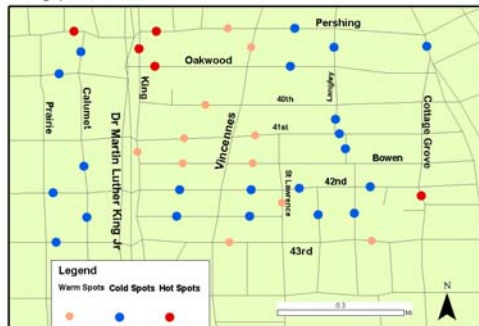
## Classification of Blocks 2000 Robberies

Class of Robberies per Street Block Faces



## Stable Spots 1999 - 2000 Robberies

Change per Street Block Faces



## Stable Hot and Warm Spots 1999 - 2000 Robberies

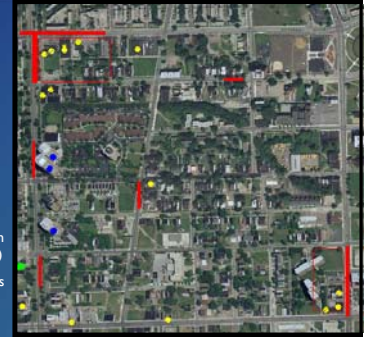
Change per Street Block Faces with Orthophoto



## Research Site

### Legend

- Yellow dots: Small or medium convenient store, fast food restaurant, liquor store, and check cashing places
- Solid Red Lines: Robbery hotspots in 1999 or 2000
- Small rectangular red circles (northwestern, and southeastern corners: stable robbery hotspot)
- Blue dots: Senior citizens' homes
- Light Green dot: Thrift store



## SSO Data

### Systematic Social Observation

- Grand Boulevard, Chicago
- Data derived from analysis of video of the environment
- Provides clues to ecological advantages of areas with persistent high crime



## Ethnographic Data

### Interviews with neighborhood experts

- Collected by St. Jean over 4.5 years
  - Including former and active robbers
- Indicate robbery hotspots are at locations that offer the most *ecological advantage*
- Related Factors: anonymity and predictable, spontaneous opportunity such as near:
  - Grocery stores, currency exchanges, fast food restaurants, liquor stores

## Ethnographic Data

All quotations are from St. Jean's book manuscript entitled *Pockets of Crime: A New Look at High Crime Areas in the City* – currently under review for publication.

### Location Choice:

"But generally, you rob where you be at for whatever reason if you have the chance. It is where you feel comfortable, or where you get the chance. Or you may go out looking, hunting."



### Location Targets:

"So you go to a spot where you can escape easy. Like in this neighborhood it may be a currency exchange, a grocery store, a fast food joint, outside a bank in another neighborhood, a store downtown, a gas station. This is all a place where people be at with money."

**Victims:** "There always be somebody distracted... The situation presents itself. You may have a strategy and then again you may don't have one. You see the money you take it. You know where the money at, you go get it. To make it quick you pull a gun. If they resist, you must show you mean business."

## Conclusions

- **Goal of this study:** understanding how robbery hotspots reflect structures of criminal opportunity of place (ecological advantage)
  - Using Triangulated Multi-method Analysis
- **Criminogenic Ideal Types** reflect likely future areas of increase or displacement from intervention
- **Law enforcement and neighborhood watch** could consider likely future hotspots based on micro-scale neighborhood analysis



## Conclusions

The data show that even though this neighborhood is located on a section of the South Side of Chicago which is generally considered as a large crime hotspot, robbery hotspots are observed in strategic locations, over time. It is important to consider what will happen if intervention is activated in these areas, when there are potential “next spots” that can be almost as lucrative to robbers. The paper in progress that this presentation is based on explains some of these matters in further detail.

## Conclusions

The issues that are relevant to the spatial and temporal distributions of robberies are also being carefully explained in St. Jean's book manuscript entitled *Pockets of Crime: A New Look at High Crime Areas in the City* that is currently under review for publication. *Pockets of Crime* also explore the relevance of broken windows, and collective efficacy hypotheses as they relate to neighborhoods and robberies.

## Questions and Comments

For more information, please contact,

**Peter K. B. St. Jean, Ph.D.**

Assistant Professor  
Department of Sociology  
University at Buffalo  
State University of New York (SUNY)  
716-645-2417\*468  
pstjean@buffalo.edu